

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH AT NEW DELHI**

O. A. NO. 627 OF 2022

Prakash Yadav

...Applicant

VERSUS

State of Haryana and Others

...Respondents

Response of Irrigation & W.R. Department, Haryana in compliance of the direction passed in para no. 2 of the order dated 13-5-2024 on behalf of respondent no. 5.

Respectfully Showeth :

- 1 That on the last date of hearing held on 13.05.2024, this Hon'ble Principal Bench of NGT, New Delhi has perused the reply dated 01.05.2024 filed by the State of Rajasthan, whereby it was claimed that there are two check dams constructed on the River Sahibi. The Ld. Counsel appearing for the State of Haryana has disputed the above claim. Upon that, on the prayer of Ld. Counsel of State of Haryana, this Hon'ble National Green Tribunal (Principal Bench), New Delhi pleased to allow one week's time to file reply to the stand taken by the State of Rajasthan.
- 2 That a joint inspection of rain water harvesting structures/check dams constructed by State of Rajasthan in Sahibi, Krishnawati & Dohan River catchments was carried out on 24.05.2005 & 25.05.2005 having representatives from Upper Yamuna River Board

(UYRB) and State of Rajasthan & Haryana. The report of the committee was issued by Upper Yamuna River Board, Ministry of Water Resources, Government of India to the State of Rajasthan and Haryana vide No. UYRB/Tech./21/04/410-13 dated 01.06.2005, which is annexed as **(Annexure R-1/5)**. Sr. No. 4 of the report of the joint inspection clearly shows that a total of 83 check dams have been constructed by Rajasthan in Sahibi, Krishnawati & Dohan River catchments having some of them even older than 100 years while some others were more recent. Since, it was not possible to visit all the 83 sites, so 11 sites were visited as decided by consensus and further officials representing Rajasthan State were requested to provide the data for all the structures at the earliest which has not been received till now. The list of members was appended as Appendix-1 and list of check dams inspected by the Committee was appended as Appendix-2 (09 No. check dams inspected on River Sahibi and 01 No. each on River Krishnawati & Dohan respectively). The rebuttal to the claim of State of Rajasthan in reply dated 01.05.2024 is purely based on the aforementioned document which has never been disputed by the State of Rajasthan.

In view of the above submissions, it is very respectfully submitted that above response may kindly be accepted.

Date: 21.05.2024

Place: Rewari



(Ravinder Pal)
Superintending Engineer,
JLN Water Services Circle,
Irrigation and Water Resources,
Department, Rewari.

(on behalf of Respondent No. 5)

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No. UYRB/Tech.(21/04/410-13
Government of India
Ministry of Water Resources
Upper Yamuna River Board

To

- ✓ 1: **Shri R. K. Garg,**
Chief Engineer (YWS),
Government of Haryana.
- 2: **Shri M.R.Bhati,**
Chief Engineer (Irrigation),
Government of Rajasthan.

1-June-05

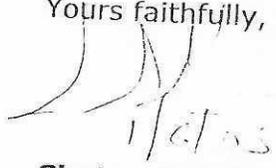
**Subject: Report of the joint inspection of check dams in Sahibi,
Krishnawati and Dohan areas.**

Dear Sir,

As decided in the 26th meeting of the Board, inspection of the rain water collecting structures in Rajasthan in the upper catchments of Krishnawati, Sahibi, and Dohan catchments was held on 24th and 25th May, '05. The report of the said inspection is enclosed.

On behalf of the team, I take this opportunity to record our thanks to the concerned officials from both Rajasthan and Haryana, for all the arrangements made and support extended to the team for the said inspection.

Yours faithfully,


Chetan Pandit
Member Secretary

Copy to for kind information **Shri D. K. Mehta**, Commissioner (Indus).

Report of joint inspection of rain water harvesting structures constructed by Rajasthan in Sahibi, Krishnavati and Dohan River Catchments.

1. Haryana had complained that Rajasthan has constructed many rain water harvesting structures in the Sahibi, Krishnavati and Dohan catchments, which are a part of the Upper Yamuna Catchment, and as a result the water availability in the down-stream areas in Haryana, is significantly reduced. This complaint was discussed in the 26th meeting of the Board held on 5th August, 2004, wherein, it was decided that a joint inspection of some of these structures will be held by the representatives of Rajasthan, Haryana and YRB. Accordingly, the said inspection was held on 24th and 25th May, 2005. Compositions of the team on each of these two days is given in Appendix-1.
2. The team assembled on 24th morning at Dharuhera on Delhi-Jaipur highway and inspected nine sites on the right bank of Sahibi. At the end of the day, the team also visited the hydro-meteorological observatory on the banks of Sahibi river and reached the rest house of Haryana Irrigation Department at Narnaul for the night halt. On 25th morning, the team assembled on the highway near Narnaul and inspected two sites - one each in Krishnavati and Dohan sub-basins and concluded the inspection around afternoon at Khetri. The list of tanks visited and their salient features are given in Appendix-2.



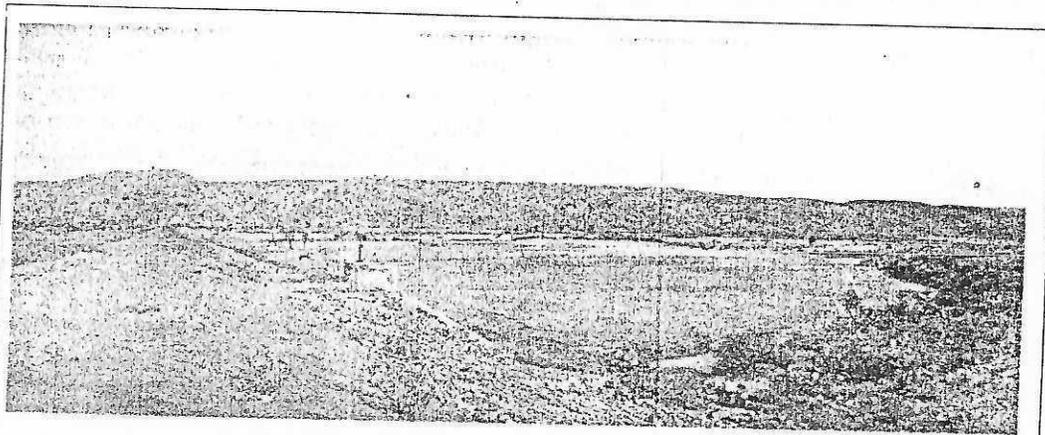
Upstream
Side

Nimbaheri Check dam in Sahibi catchment.

Sahibi, Krishnavati and Dohan rivulets are in the catchment of Upper Yamuna Basin as per topography, but these cannot be said to be tributaries of Yamuna. Sahibi, the largest of the three, finally meets a lake in Nazafgarh area near Delhi. Although a drain called Nazafgarh drain takes off from this lake and meets Yamuna, it cannot be said that this drain regularly carries the discharge from the catchment of Sahibi into Yamuna. The other two, namely Krishnavati and Dohan, do not even have such a connection with the main stream Yamuna, and they both vanish in the semi-arid tracts of Rajasthan and Haryana. The water in these rivulets is lost primarily by way of percolation to the ground strata. Therefore it is obvious that the rainfall in this area contributes to the ground water recharge in both Rajasthan and Haryana.

57
98

4. 83 check dams have been constructed by Rajasthan in this area. Some of them are older than 100 years while some others are more recent. Officials from Rajasthan were very co-operative in providing the data about all the check dams and were willing to escort the team to whichever site the inspection team chose to visit. It was clearly not possible to visit all the 83 sites. A representative sample to be visited was decided by consensus, taking into account the road connectivity.
5. The salient features of the structures visited is enclosed at Appendix-2. Officials representing Rajasthan were requested to provide the data for all the structures. They have promised to do so at the earliest. After receiving this data, further analysis can start. Meanwhile, following are the issues for consideration.
6. No conclusion can be arrived at only by physically inspecting the structures. It may be pointed out that there was no dispute with respect to physical features, viz the height of the dams, catchment area intercepted, storage capacity etc. to be settled by a physical inspection. While acknowledging the problems faced by Haryana, a solution will emerge only from an analysis of the data for all the structures, which, as aforesaid, are awaited. Nevertheless, the inspection on 24th and 25th serve the purpose of all concerned familiarizing themselves with each others' difficulties, the situation on the ground, the difficulties faced by the people, the severity of the problems etc.

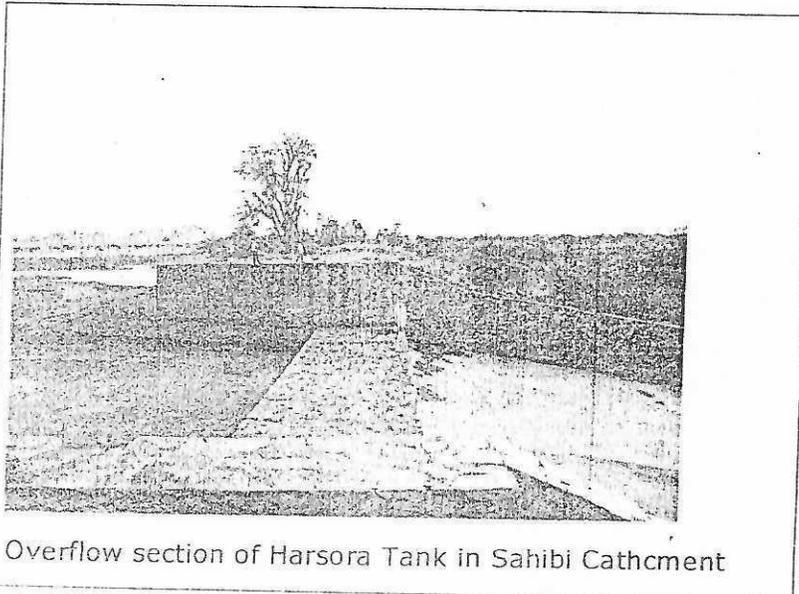


Panoramic View of Naugaon Tank and Watersehd in Sahibi Catchment

7. The structures constructed by Rajasthan are a classic expression of the concept of rain water harvesting as is being promoted now vigorously, mostly as an alternative to large dams. In most of the cases, there is no canal taking off from the storage and the entire water collected is used to recharge the ground water – which is how it should be. In some cases, a small canal exists but was clearly not in use. Only in a rare case, the canal exists and also is used occasionally. In fact, the accompanying officials from Rajasthan informed the team that the villagers themselves are against supplying water in the canal, and want the storage to be used for ground water recharge only.
8. The time of inspection being the end of May, obviously all the tanks were empty. However, the team was informed that usually the collected water

remains in the tank till November end or mid-December. As is always the case in small scale rain water harvesting, the submergence area of the tank is quite large as compared to its storage capacity. It was learnt that the people who owned the land in the submergence area, have preferred not to part with their land in return for compensation, and prefer to take one crop using the soil moisture after the standing water has percolated.

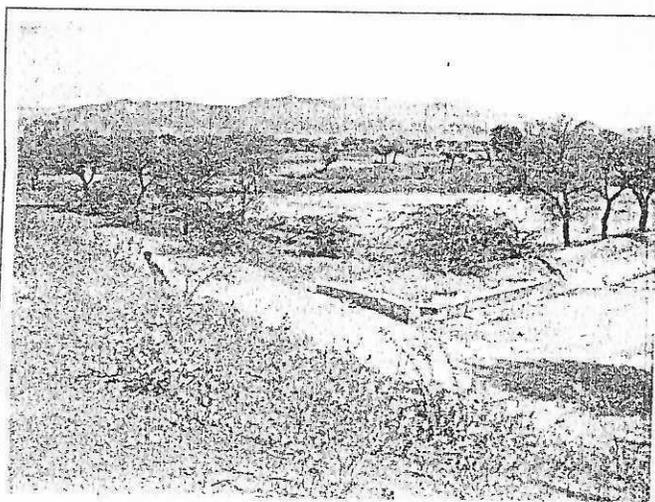
9. In the immediate vicinity of the dams, up-stream and also down-stream, the ground water table is said to be around 45 feet. This, in the month of May-end, is a remarkable achievement for a semi-arid area. In most of the areas as seen during travel from one tank to another, one could see fields with crops being irrigated by diesel engines operated pump sets. Likewise, hand pumps were also seen in all the areas and were being used for supply of water for domestic use. ✓
10. Thus, it may be said that as a rain water harvesting work, the structures have successfully served the purpose for which they were built. They have enabled the people in this area to take at least one irrigated crop, and have provided water for domestic use. Of course they have also had some adverse impact on the downstream areas. **Thus, the crux of the issue is - interstate aspect of small scale rain water harvesting.** ✓
11. As mentioned above in para 3, the flow in all the three rivers is lost through percolation to ground water aquifer. Before the construction of said check dams by Rajasthan, some flow would be reaching Haryana and would thus recharge the GW in Haryana too. Now, with the construction of check dams in the upper catchment by Rajasthan, little or no flow would reach Haryana, and the ground water recharge in Haryana would be considerably reduced. ✓



Overflow section of Harsora Tank in Sahibi Cathment

12. Although in most cases the check dams did have an overflow section, it seems that height of the check dams and also the overflow section in all cases was rather high, and it would be very rare for any overflow to take place. Thus, the check dams would be abstracting 100% of the yield of the catchment intercepted by the dams. ✓

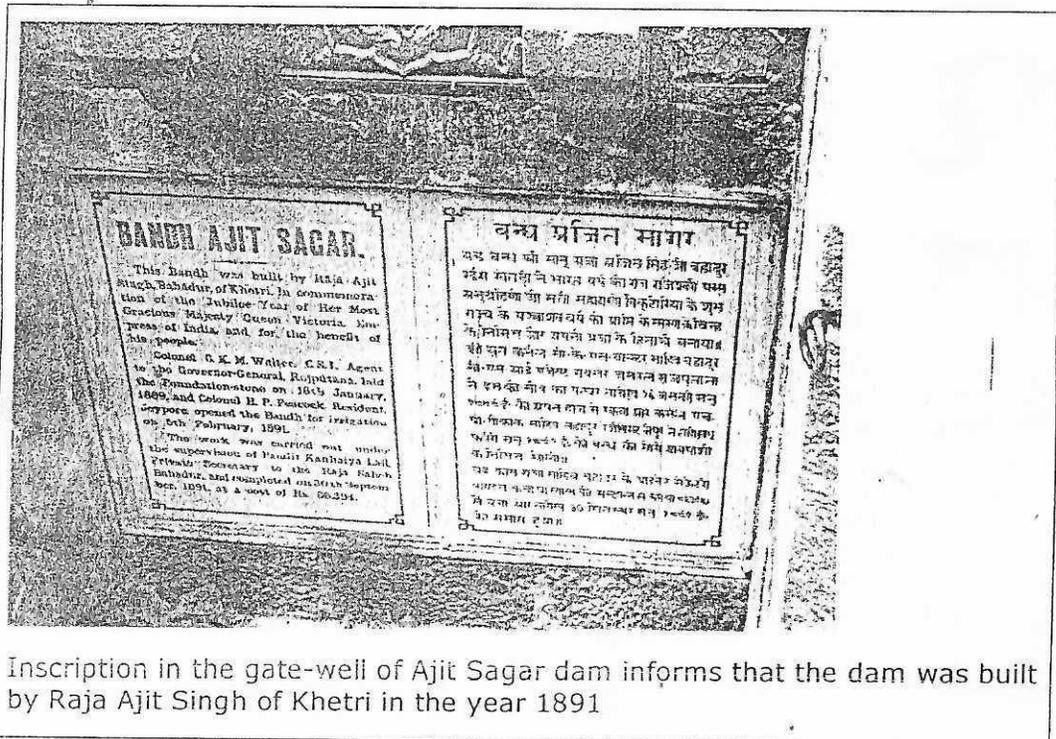
13. Officers representing Haryana informed that in Haryana areas like Narnaul, the water table has gone down to as low as 1000 feet because of non-availability of recharge now as compared to pre-check dams era. There is no doubt that interception of the flow in Rajasthan would mean reduced recharge in Haryana. But it is extremely difficult to quantify how much of the lowering of water table is on account of reduced recharge because of the check dams; and how much is due to other factors like possible reduction in the rainfall, and increased extraction of ground water. Reduced recharge is only one factor in the overall matrix and it is not correct to say that the lowering of water table is entirely due to this. ✓
14. Long time ago, when technology for construction of larger dams did not exist, our ancestors constructed such small check dams to intercept and save rain water. The water thus stored was used for both irrigation and domestic use.



Downstream side of the Ajit Sagar dam. Canal taking off through the body of the dam is seen in the foreground on right.

15. As the construction technology progressed and many larger dams were constructed at various places all over the India. The assured irrigation from these dams, together with improved high yielding variety of seeds and chemical fertilizers, enable India to come out of the era of eternal food storages, and around 1975 India become self-sufficient in food production *despite a several fold increase in population* since Independence.
16. By early 80s, concerns about the environmental and social impacts of large dams were being highlighted and 80s and 90s saw the emergence of activism against the large dams. The activists were under pressure to suggest an alternative to supply water for irrigation, and, in absence of any other idea, they proposed the small check dams concept as an alternative to the large dams. This is now being pushed under names such as *wisdom of the centuries, traditional technologies, local decentralized water management, people-centric solutions, गांव का पानी गांव में, खेत पानी खेत में* etc.

17. There are areas where the topography and the hydrology is not suitable for construction of larger dams, and the Sahibi, Krishnawati and Dohan areas are an example of this. These areas have no other option but to rely on small check dams for their water needs. However, the activists, driving more by ideological considerations rather than hydrology, have put up an intense propaganda in favour of small check dams, even where the hydrology and the topography is suitable for large dams. This has led to an intense debate about the desirability or otherwise all large dams. But in the heat of this debate, the riparian aspect of smaller check dams has come to be neglected.



Inscription in the gate-well of Ajit Sagar dam informs that the dam was built by Raja Ajit Singh of Khetri in the year 1891

18. A major or medium project in an interstate catchment would normally be examined by the CWC for its interstate implications. But the small check dam is not examined by any central agency for its interstate aspect. However, a small check dam has as much implication for the lower riparian, as has a large project. The effect of the single check dam may not be much, but when a large number of them are constructed, then collectively their impact becomes comparable to that of a larger project, which is what seems to have happened in the present case. However, as per prevalent practice, the small check dams never came up for an examination of their riparian aspect, which in the present case are interstate aspect.
19. For a hydrologist, it is plain obvious that any abstraction in the upstream, whether through a large dam or through the medium dam or through small check dams, would reduce water availability for the lower riparian areas. Some people argue that the quantity intercepted by small check dams would be insignificant. This is not correct. The amount of water lost by the lower area cannot be considered small or large by itself. Such a conclusion can only be drawn by comparison of the quantum lost with total water availability in that

area. In an area of high rainfall, the loss may not make much difference to the downstream area. But in an area of low rainfall, the loss would make a significant difference. i.e. a 3 meter high check dam with storage capacity of 0.1 Mcm would have a very marginal impact on the down stream area in, say, Northern catchments of Ganga basin, where the interception by the check dam would amount to a small fraction of the total yield, and a considerable part would continue to be available to the down stream area. But the same check dam in a semiarid region would intercept 100 % of the catchment yield and would have a serious impact on the down-stream area.

20. There are reports from elsewhere in the country also where distress in the downstream areas has been reported after extensive rainwater harvesting in upper catchment. In Rajasthan itself, when Tarun Bharat Sangh constructed the Lava-Ka-Baas check dam, the Government of Rajasthan had in fact objected to the said construction, as it would deprive the down-stream area of water. However, eventually the dam was allowed to stand. The Lava-Ka-Baas case indicates a general acceptance that even a small check dam affects water availability in down-stream areas, and also infringes on the rights of the down-stream population.
21. **The "thinkers" in water sector have not given this crucial aspect the attention it deserves.** The activists are lobbying for water management through rainwater harvesting only for ideological reasons, and it is expedient for them to ignore any negative impacts of rainwater harvesting. But the professional water managers will not be able to ignore this any longer, and the complaint by Haryana has brought the issue to center stage.
22. Because contemporary thinkers in water resources have avoided squarely addressing the impact of small water harvesting structures in down-stream areas, therefore no guidelines or precedents are available on how to deal with this situation, how much water should be intercepted by the check dams and how much should be released for the down-stream areas, etc. While appreciating the difficulties faced by Haryana, it is not going to be easy to decide how much water should be made available to Haryana, and how.
23. In 1994, an MoU has been signed amongst the concerned States, which include Rajasthan and Haryana, for sharing of the water of Upper Yamuna. The mean flow available at Okhla has been assessed and has been allocated amongst the states. It is not clear where the mean flow at Okhla includes the water yield from catchments of land locked rivers which do not contribute to the flow in main stream Yamuna. Normally the yield of a main river at a point determined by adding abstractions up-stream to the observed flow at that point. However, utilization of water from a landlocked river, which is not a tributary of the main river, may not be accounted for in the water yield. It needs to This needs to be examined.
24. If it is found that the water allocated includes the yield of the land locked catchments, then it would mean that the sharing of this has also been decided in the over all shares of each state. In that case, the water used by each state will have to be within such share, whether from main Yamuna, or from its main tributaries, or from a land locked catchment. On the other hand, if it is found that this catchment yield was not counted and was not a part of the water allocated, then the issue is open for discussion.

67
103**25. Summary**

- a) The check dams constructed by Rajasthan abstract close to 100% of the yield of the catchment at that point and this reduces water availability in the areas in down-stream areas in Haryana.
- b) Compared to the total catchment area of any of the rivulets, the impact of these structures collectively may appear small, but each structure is capable of causing acute distress in the down-stream area at local level.
- c) Although the GW situation in down stream areas in Haryana is very poor, it is extremely difficult to quantify how much of the lowering of water table is on account of reduced recharge because of the check dams; and how much is due to other factors like possible reduction in the rainfall, and increased extraction of ground water. Reduced recharge is only one factor in the overall matrix.
- d) Activists, in their enthusiasm to pose small check dams as an alternative to large dams, have preferred to suppress the riparian and interstate aspects of the small check dams. Unfortunately, the professional water managers, their attention engaged in the "dams or no dams" debate, have also not adequately addressed this aspect.
- e) Therefore, no guidelines or precedents exist as to how much water should reasonably be used in the upstream area and how much should be allowed to flow down-stream for the lower riparian states.
- f) The present controversy has brought in sharp focus an issue that has so far been neglected. It is felt that the opportunity should be used to address it squarely, so as to not only evolve a solution for the present case, but also to serve as a precedent for future such cases which are bound to arise elsewhere as the stress on available water increases.
- g) As a first step towards a solution, it will be necessary to examine whether the yield of Sahibi, Krishnavati and Dohan catchments was taken into account while computing the mean yield at Okhla.

It is proposed that the matter be taken up in the next board meeting to decide the further course of action.

Appendix-1**Composition of the inspection team**24-5-2005**Upper Yamuna River Board:**

- 1) Sri Chetan Pandit, CE & Member Secretary
- 2) Sri M. Sai Sudarsanam, Executive Engineer

Rajasthan:

- 1) Sri R.C. Saini, Superintending Engineer
- 2) Sri M.S. Shekhawat, Executive Engineer
- 3) Sri H.C. Kaushik, SDO
- 4) Sri Dharmesh Yadav, SDO
- 5) Sri Balram Singh, Junior Engineer
- 6) Sri K.K. Yadav, Junior Engineer

Haryana:

- 1) Sri A.K. Jain, Superintending Engineer
- 2) Sri S.C. Chawla, Executive Engineer
- 3) Sri Rajeev Verma, Executive Engineer
- 4) Sri R.N. Rajpaul, SDO
- 5) Sri L.S. Yadav, Junior Engineer

25-5-2005**Upper Yamuna River Board:**

- 1) Sri Chetan Pandit, CE & Member Secretary
- 2) Sri M. Sai Sudarsanam, Executive Engineer

Rajasthan:

- 1) Sri Anil C. Mathur, Superintending Engineer
- 2) Sri Hanuman Singh, Executive Engineer
- 3) Sri Pirthavi Singh, SDO

Haryana :

- 1) Sri Y.K. Goel, Superintending Engineer
- 2) Sri R.S. Garg, Executive Engineer
- 3) Sri Rajeev Verma, Executive Engineer
- 4) Sri Arun Kaushik, Junior Engineer

64
105

Appendix-2

List of check dams inspected

Sl. NO.	Name of bund	Sub-basin	Catchment area intercepted (sq.miles)	Height of dam in ft	Year of Completion	Capacity in Mcft
1	Nimbaheri	Sahibi	6.34			49.75
2	Naugaon	Sahibi	24.00		Pre - 1978	12.00
3	Dhiriyawas	Sahibi	5.00			30.00
4	Milkpur Patan	Sahibi	6.27		Post 1978	47.37
5	Bagthala	Sahibi	11.27	9	Pre - 1978	9.00
6	Jataka	Sahibi	9.50	8	Pre - 1978	73.00
7	Britole	Sahibi	2.22			20.50
8	Dhakvasan	Sahibi	1.50			13.93
	Harsora	Sahibi	61.95	42.5	Pre - 1978	137.50
10	Raipur Patarf	Krishnavati	59.41		1967-68	324.00
11	Ajeet Sagar	Dohan	9.26	163.86	Pre - independence	163.86